



K17U 2498

Reg. No. :

Name :

I Semester B.A. Degree (CBCSS – Reg./Supple./Improv.)
Examination, November 2017

COMPLEMENTARY COURSE IN ECONOMICS

1C01 ECO : Mathematics for Economic Analysis – I
(2014 Admn. Onwards)

Time : 3 Hours

Max. Marks : 40

PART – A

Answer **all** questions. **Each** question carries **one** mark.

1. What is a function ?
2. Define limit of a function.
3. If $y = x^2$, what is $\frac{dy}{dx}$?
4. Define supply curve.

(1×4=4)

PART – B

Answer **any seven** questions. **Each** question carries **2** marks.

5. Distinguish between cost function and revenue function.
6. Draw the graph of the equation $3x + y - 10 = 0$.
7. Explain L'Hospital rule.
8. Evaluate $\lim_{x \rightarrow a} \frac{\sqrt{6+x} - \sqrt{6-x}}{x}$.
9. Explain continuity of a function at an interval.
10. Differentiate with respect to x , $\frac{x^3}{\log x}$.
11. What is homogenous function ?
12. What is total differentiation ?

P.T.O.

K17U 2498



13. Distinguish between demand function and supply function.

14. What are concave and convex functions ?

(2x7=14)

PART - C

Answer **any four** questions. **Each** question carries **3** marks.

15. Explain partial differentiation. Find the first and second order partial derivatives for $Z = 3x^3 - 2x^2y + 2xy^2 + y^3 + 8$.

16. Show that the Cobb-Douglas production function $Q = AL^\alpha K^\beta$ a homogenous function of degree 1.

17. The demand function of a monopolist is $p = 10 - 2x$ and the cost function is $C(x) = x^2 + 2x$. Find the (1) MC, (2) MR, (3) Equilibrium output (4) equilibrium price (5) AC, (6) AC when the output is 5 units.

18. Differentiate (a) $x^{\log x}$ (b) x^x .

19. Draw the graphs of constant function, linear function, exponential function and logarithmic function.

20. Using function $f(x, y) = x^2 + y^2 - 2xy + 8x + 9y + 3$. Show that

$$\frac{\partial^2 f}{\partial x \partial y} = \frac{\partial^2 f}{\partial y \partial x}$$

(3x4=12)

PART - D

Answer **any two** questions. **Each** question carries **5** marks.

21. Explain the rules of differentiation with suitable examples.

22. Explain the Euler's theorem. Verify Euler's theorem for $f(x, y) = ax^2 + 2hxy + by^2$.

23. Explain Lagrange Multiplier. Examine the function $f(x, y) = 5x^2 + 6y^2 - xy$ for maxima and minima, if any subject to $x + 2y = 24$.

24. Explain the application of derivatives in Economics.

(5x2=10)